

- 1) The Insurance Institute for Highway Safety published data on repair costs for cars involved in different types of accidents. In one study, seven different 2009 models of mini- and micro-cars were driven at 6 mph straight into a fixed barrier. The following table gives the cost of repairing damage to the bumper for each of the seven models.

Model	Repair Cost
Smart Fortwo	\$1,480
Chevrolet Aveo	\$1,071
Mini Cooper	\$2,291
Toyota Yaris	\$1,688
Honda Fit	\$1,124
Hyundai Accent	\$3,476
Kia Rio	\$3,701

Compute the values of the mean and median. Why are these values so different? Which of the two—Mean or median—appears to be better as a description of a typical value for this data set?

- 2) Consumer Reports Health reported the sodium content (mg) per 2 tablespoon serving for each of 11 different peanut butters:
- 120 50 140 120 150 150 150 65 170 250 110
- Display these data using a dotplot. Comment on any unusual features of the plot.
 - Compute the mean and median sodium content for the peanut butters in this sample.
 - The values of the mean and the median for this data set are similar. What aspect of the distribution of sodium content – as pictured in the dotplot from part (a) – provides an explanation for why the values of the mean and median are similar?
- 3) In August 2009, Harris Interactive released the results of the “Great Schools” survey. In this survey, 1086 parents of children attending a public or private school were asked approximately how much time they spent volunteering at school per month over the last school year. For this sample, the mean number of hours per month was 5.6 hours and the median number of hours was 1.0. What does the large difference between the mean and median tell you about this data set?
- 4) The accompanying data on number of minutes used for cell phone calls in one month was generated to be consistent with summary statistics published in a report of a marketing study of San Diego residents:
- 189 0 189 177 106 201 0 212 0 306 0 0
59 224 0 189 142 83 71 165 236 0 142 236
130
- Would you recommend the mean or the median as a measure of center for this data set? (Hint: It may help to look at a graphical display of the data)
 - Compute a trimmed mean by deleting the three largest observations in the data set and then averaging the remaining 19 observations. What is the trimming percentage for this trimmed mean?

- c. What trimming percentage would you need to use in order to delete all of the 0 minute values from the data set? Would you recommend a trimmed mean with this trimming percentage? Explain why or why not.
- 5) The ministry of Health and Long-Term Care in Ontario, Canada, publishes information on its web site on the time that patients must wait for various medical procedures. For two cardiac procedures completed in fall of 2005, the following information was provided:

	Number of Completed Procedures	Median Wait Time (days)	Mean Wait Time (days)	90% Completed Within (days)
Angioplasty	847	14	18	39
Bypass Surgery	539	13	19	42

- a. The median wait time for angioplasty is greater than the median wait time for bypass surgery but the mean wait time is shorter for angioplasty than for bypass surgery. What does this suggest about the distribution of wait times for these two procedures?
- 6) Consider the following statement: More than 65% of the residents of Los Angeles earn less than the average wage for that city. Could this statement be correct? If so, how? If not, why not?
- 7) Suppose that 10 patients with meningitis received treatment with large doses of penicillin. Three days later, temperatures were recorded, and the treatment was considered successful if there had been a reduction in a patient's temperature. Denoting success by S and failure by F, the 10 observations are:
- S S F S S S F F S S
- a. What is the value of the sample proportion of successes?
- b. Replace each S with a 1 and each F with a 0. Then calculate the mean for this numerically coded sample. How does the mean compare to the sample proportion of successes?
- c. Suppose that it is decided to include 15 more patients in the study. How many of these would have to be S's to give the sample proportion of success = .80 for the entire sample of 25 patients.
- 8) An instructor has grades 19 exam papers submitted by students in a class of 20 students, and the average so far is 70. (The maximum possible score is 100) How high would the score on the last paper have to be to raise the class average by 1 point? By 2 points?